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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/604,105

06/26/2003

James S. Mason

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05/13/2004

EXAMINER

NGUYEN, MINH T

INTERNATIONAL BUSINESS MACHINES CORPORATION

DEPT. 18G

BLDG. 300-482

2070 ROUTE 52

HOPEWELL JUNCTION, NY 12533

ART UNIT

PAPER NUMBER

2816

DATE MAILED: 05/13/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/604,105

Applicant(s)

MASON, JAMES S.

Examiner

Minh Nguyen

Art Unit

2816

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 26 April 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,4-9,12-17 and 20-24 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,4-9,12-17 and 20-24 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 26 June 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

1. Applicant's amendment filed on 4/26/04 has been received and entered. Claims 1, 4-9, 12-17 and 20-24 are pending. The amendment and argument provided therein overcome the informality objections, and the prior art rejection based on Starr's reference noted in the previous Office action, and therefore, these are withdrawn. The prior art rejection based on Ilkbahar's reference is remained for the reasons set forth below. This action is FINAL.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1, 4-5, 9, 12-13, 17 and 20-21 are rejected under 35 U.S.C. 102(b) as being anticipated by US Patent No. 6,026,456, issued to Ilkbahar.

As per claim 1, Ilkbahar discloses an arrangement (Fig. 5), comprising:

a first active device (NMOS 560) to provide resistance (Fig. 5 is a termination circuit, column 7, line 52), having a non-linear response (because it is an NMOS), being coupled to receive a first control signal (the control signal to the gate of NMOS 560, i.e., line 528); and

a second active device (PMOS 532) coupled to the first active device (in parallel as shown), having a non-linear response (because it is a PMOS) adapted to compensate

Art Unit: 2816

substantially for the non-linear response of the first active device (due to the complementary characteristics of PMOS and NMOS), being coupled to receive a second control signal (the control signal to the gate of PMOS 532, i.e., line 526).

As per claims 4-5, the recited limitations are met since FET 560 is NMOS, FET 532 is PMOS.

As per claims 9 and 12-13, rejected for the same reasons noted in claims 1 and 4-5, respectively.

As per claims 17 and 20-21, these claims are merely methods to operate an active resistor network having structures discussed in claims 1 and 4-5, since Ilkbahar teaches the network, he inherently teaches the method to operate.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 6-8, 14-16 and 22-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over US Patent No. 6,026,456, issued to Ilkbahar.

As per claim 6, Ilkbahar discloses an arrangement having the structure discussed in claim 5 above but he does not explicitly disclose the first and second active devices are provided with minimum dimensions for optimal high frequency performance as called for in the claim.

However, as ruled by the court, when general conditions are disclosed in the prior art (in the particular case, Ilkbahar teaches the arrangement which is the same as the inventive claim and for use as active resistor for applications such as transmission line terminators which are also the same as the present invention), it is not inventive to discover the optimum ranges by routine experimentation.

It would have been obvious to one skilled in the art at the time of the invention was made to minimize the dimensions of FETs in the Ilkbahar terminator network in order to have a more compact module which is obviously a desirable feature for any electronic circuits.

As per claims 7-8, the arrangement discussed in claim 6 does not explicitly teach the first and second active devices are tuned using an optimization algorithm or a manual technique as called for in claims 7-8, respectively.

However, as ruled by the court, when general conditions are disclosed in the prior art, it is not inventive to modify and discover the optimum ranges by routine experimentation.

It would have been obvious to one skilled in the art at the time of the invention was made to tune the FETs in the Ilkbahar's active resistor using different techniques to obtain the precisions of the resistances, examples would be using manual technique for simple applications, using laborious, complex techniques such as genetic algorithm or neural network for complex applications and these selections are well-known to a person skilled in the art.

As per claims 14-16 and 22-24, these claims are rejected for the same reasons and motivations discussed in claims 6-8 herein above.

Response to Arguments

4. Applicant's arguments filed on 4/26/04 have been fully considered but they are not persuasive.

The sole argument is that Ilkbahar does not disclose an active resistor network where different FET types are coupled with different control signals.

As discussed in the preceding rejection, it is clear that NFET 560 and PFET 532 are different types of transistors, i.e., one is n-type and the other is p-type; further, NFET 560 and PFET 532 are connected in parallel, i.e., one node is VT and the other node is 555; further, the control line 528 is for receiving a first control signal and the control line 526 for receiving a second control signal. It is clear that such a structure clearly meet all the limitations recited in claim 1. Column 7, line 57 teaches control signal 528 is used to control NFET 560 and column 8, line 1 teaches control signal 526 is used to control PFET 532. The control signal on line 526 is generated based on the process compensation factor (column 7, lines 61-65) and the control signal on line 528 is selectable to enable NFET 560 at any time which does not require the input of the process compensation factor (column 7, lines 56-57). Column 8, lines 49-59 further teaches various combination of control signals to vary the impedance of the resistor network. In conclusion, the above noted teachings clearly show that the control signals on lines 526 and 528 are different signals.

Conclusion

5. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

Art Unit: 2816

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Minh Nguyen whose telephone number is 571-272-1748. The examiner can normally be reached on Monday, Tuesday, Thursday, Friday 7:00-5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Timothy Callahan can be reached on 571-272-1740. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



5/10/04

Minh Nguyen
Primary Examiner
Art Unit 2816